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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/882,699	06/15/2001	Xiaoming Ren	107044-0009	1351

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CESARI AND MCKENNA, LLP  
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EXAMINER

YUAN, DAH WEI D

ART UNIT PAPER NUMBER

1745

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/882,699

Applicant(s)

REN, XIAOMING

Examiner

Dah-Wei D. Yuan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 117-125 is/are pending in the application.
- 4a) Of the above claim(s) 117-123 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 124 and 125 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

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**NON-AQUEOUS ELECTROLYTE AND LITHIUM SECONDARY BATTERY  
USING THE SAME**

Examiner: Yuan      S.N. 09/458,274      Art Unit: 1745      January 15, 2003

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 11, 2005 has been entered. Claims 1-116 were canceled. Claims 117-125 were added.

***Election/Restrictions***

2. This application contains claims directed to the following patentably distinct species of the claimed invention.

I, Claims 117-119, drawn to a direct oxidation fuel cell comprising an anodic metallic diffusion layer comprised of a metallic plate having alternating rows of pores.

II, Claim 120, drawn to a direct oxidation fuel cell comprising an anodic metallic diffusion layer comprising a metal sheet having pores.

III, Claim 121, drawn to a direct oxidation fuel cell comprising a cathodic metallic diffusion layer comprised of a metallic plate having pores.

IV, Claims 122-123, drawn to a direct oxidation fuel cell comprising a metallic diffusion layer comprising a metal with a rough texture and expanded structure.

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V, Claims 124-125, drawn to a direct oxidation fuel cell comprising a metallic layer fabricated of microscopic particles.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, none of the claims is generic.

3. During a telephone conversation with Ms. Rita M. Rooney of Cesari and McKenna, LLP on December 6, 2005, a provisional election was made without traverse to prosecute the invention of species V, claims 124 and 125. Affirmation of this election must be made by applicant in replying to this Office action. Claims 117-123 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 124 is rejected under 35 U.S.C. 103(a) as being unpatentable over Marchetti (US 5,869,202) in view of Neumann et al. (US 6,652,804).

Marchetti teaches a fuel cell comprising a membrane electrode assembly including an electrolyte membrane (4), an anode (6) and a cathode (8) and a metallic gas

permeable component made of sintered metal frits. See Column 6, Lines 25-48; Figure 1. However, Marchetti does not teach or suggest the porosity size of the sintered metal frits is determined by the size of the metal particles. Neumann et al. teach a method for producing an openly porous sintered metal component. It is disclosed that the porosity is determined essentially through the specification of the particle size and the flow resistance is determined through the thickness and the particle size of the sintered metal component. See Column 4, Lines 14-29. Therefore, it would have been obvious to one of ordinary skill in the art to modify the particle size and thickness of the sintered metal frits of Marchetti, because Neumann et al. teach the diameter (size) of the metal particles controls the porosity size and flow resistance of the sintered metal component. The term “direct oxidation fuel cell” is understood as a fuel cell system wherein fuel is introduced into the fuel cell without processing. Marchetti teaches the use of pressurized hydrogen as the reactant for the anode.

6. Claim 125 is rejected under 35 U.S.C. 103(a) as being unpatentable over Van Marchetti (US 5,869,202) and Neumann et al. (US 6,652,804) as applied to claim 124 above, and further in view of Yu et al. (US 6,399,202).

Marchetti and Neumann teach a direct oxidation fuel cell system as described above in Paragraph 5. However, Marchetti and Neumann do not disclose the metallic diffusion layer is treated with a substance that renders a portion of the layer hydrophilic. Yu et al. disclose a gas-diffusion electrode for use in a fuel cell system. Specifically, Yu et al. teach the fabrication of gas diffusion electrode with a precisely controlled degree of

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hydrophobic and/or hydrophilic characteristics by using functional groups. Water-repellent structures of the diffusion layer are generally achieved by coating the surface with a hydrophobic material, such as polytetrafluoroethylene. The most common method to make the diffusion layer partly hydrophilic includes the use of a hydrophilic fluorinated resin, such as NAFION. As a result, the gas diffusion layer, which has attached at least one hydrophilic organic group as well as at least one hydrophobic organic group, can better promote a hydrophobic/hydrophilic balance in the active layer. See Column 1, Lines 66-67; Column 2, Lines 35-41; Column 3, Lines 17-45; Column 6, Lines 32-37. Therefore, it would have been obvious to one of ordinary skill in the art to treat the metallic diffusion layers of Marchetti and Neumann et al. with both PTFE and NAFION<sup>®</sup>, because Yu et al. teach the importance of optimum hydrophilic/hydrophobic properties on the metallic diffusion layers.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dah-Wei D. Yuan whose telephone number is (571) 272-1295. The examiner can normally be reached on Monday-Friday (8:00-5:00).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status

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information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dah-Wei D. Yuan  
December 7, 2005



**DAH-WEI YUAN**  
**PRIMARY EXAMINER**